

THE IDENTITY OF TWO NEARCTIC SIMULIIDAE
(DIPTERA)

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In the course of taxonomic studies on the Nearctic Simuliidae, the types of two of the older species have been examined and have been found to agree with species currently going under subsequent names. In order that these species may be associated with their prior names, the following notes are offered.

Simulium (Neosimulium) argus Williston.

Simulium argus Williston, 1893. North American Fauna 7: 253.

Eusimulium obtusum Dyar and Shannon, 1927. Proc. U. S. Natl. Mus. 69(10): 15. (New synonymy).

Simulium kamloopsi Hearle, 1932. Proc. Ent. Soc. Brit. Columbia. 29: 12. (New synonymy).

Simulium hearlei Twinn, 1938. Canad. Ent. 70: 50.

Coquillett (1900, p. 394) considered *Simulium argus* Williston to be a synonym of *S. vittatum* Zetterstedt. Since these two known species of the subgenus *Neosimulium* in the Nearctic region are scarcely distinguishable in the female except by an examination of the genital fork, this opinion is quite understandable. Through the kindness of Dr. R. H. Beamer I was loaned the type female of *argus* from the Entomological Museum, University of Kansas, with permission to prepare a dissection of the genitalia. When this was done, it was clear that *argus* closely agreed with the species that Hearle described as *kamloopsi* and not with *vittatum*. Since *argus* and *vittatum* occur together in many parts of California as well as elsewhere, specimens from the type locality of *argus* may prove to be *vittatum*, but the single type female is definitely not *vittatum*.

The type series of *Eusimulium obtusum* Dyar and Shannon consists of two males collected at Redlands, California, 1914, by F. R. Cole, each mounted whole on a slide. One of these, which I here designate as lectotype, shows the genitalia clearly and it agrees with the male of *kamloopsi*. The second is evidently *Simulium (Eusimulium) aureum* Fries, although the mount is not very satisfactory. It seems better to sink *obtusum* under the more certain of the two species involved, even though the subgeneric relationship is more remote.

Simulium kamloopsi Hearle was described from a holotype male, allotype female, and many paratypes with associated pupae collected

at Kamloops, B. C. I have examined the types in the Canadian National Collection and find that the species is readily separable from *vittatum* by the female genital fork, male genitalia, and the pupa.

Simulium hearlei Twinn was described from males collected at Fort Duchesne, Utah. This species was synonymized with *kamloopsi* by Stains and Knowlton (1943, p. 274), and since this synonymy appears to be quite correct it now falls under *argus*.

Simulium (Simulium) jenningsi Malloch

Simulium jenningsi Malloch, 1914. Bur. Ent. Tech. Ser. Bul. 26: 41.

Simulium nigroparvum Twinn, 1936. Canad. Jour. Res. 14(D): 142. (New synonymy).

The type of *Simulium jenningsi* is a female collected on Plummers Island, Maryland, July 8, 1904; the allotype, a male collected at the same place June 28, 1902. Dyar and Shannon (1927, p. 45) treated this as a synonym of *venustum* Say, but a closer examination of the material on which Malloch based the species shows it to be different from *venustum* and to agree with the species that Twinn described as *nigroparvum*. It is unfortunate that Malloch selected a female as the holotype, since this sex is more difficult to separate from *venustum* than the male or pupa. The type does show, however, black hairs on the stem vein, no hairs beneath on the subcosta, a dark pleural tuft, no recumbent pale hairs on the scutellum, and the genital fork with the distal lobes rounded. In all these respects it agrees with *nigroparvum* and disagrees with *venustum*.

The allotype male shows genitalia agreeing exactly with those of *nigroparvum*, and the pupae that Malloch mentions from Frierions Mill, Louisiana, also agree with that of *nigroparvum*. It is quite evident that most of the specimens that Malloch had when he described *jenningsi* were not *venustum*, and there is no reason to doubt that the type is the same as *nigroparvum*. For an excellent treatment of this species one should consult Underhill (1944).

LITERATURE CITED

- Coquillett, D. W., 1900. Papers from the Harriman Alaska Expedition IX. Entomological Results (3): Diptera. Proc. Wash. Acad. Sci. 2: 389-464.
- Dyar, H. G., and Shannon, R. C., 1927. The North American two-winged flies of the family Simuliidae. Proc. U. S. Natl. Mus. 69(10): 1-54.

- Stains, G. S., and Knowlton, G. F., 1943. A taxonomic and distributional study of Simuliidae of West United States. *Ann. Ent. Soc. Amer.* 36(2): 259-280.
- Underhill, G. W., 1944. Blackflies found feeding on turkeys in Virginia. (*Simulium nigroparvum* Twinn and *Simulium slossonae* Dyar and Shannon). Va. Agr. Expt. Sta., Tech. Bul. 94: 2-32.
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BOOK NOTES

A Century of Entomology in the Pacific Northwest. By Melville H. Hatch. v + 43 pp., 9 photographs. 6×9 ins., cloth bound. 1949. University of Washington Press, Seattle, Washington. (Price, \$1.50)

This book traces the principal events, names the outstanding men and cites the more important publications involved in the development of entomology in the Pacific Northwest. It concludes with a survey of the present status of entomology in the area. The book is extremely well written and should be very useful to those who are interested in any phase of entomology of the Northwest or in any of the persons associated with entomology in that area. GEORGE S. TULLOCH, Merrick, New York.

The Natural History of Mosquitoes. By Marston Bates. xv + 379 pp., 9 figures, 14 tables, 16 pages of photographs. 1949. The Macmillan Company, New York, N. Y. (Price, \$5.00)

Dr. Bates has brought together an amazing amount of factual material and presented it in such a way that it is of interest both for the layman as well as the professional entomologist. The first portion of the book is concerned with the behavior, physiology and environmental relations of all stages of the mosquito. The second portion deals with mosquitoes in relation to other organisms which is of particular interest to the medical entomologist. The remaining chapters are devoted to the species problem, the classification and distribution of mosquitoes, techniques in mosquito study and the strategy of mosquito research. There is an appendix containing a systematic list of mosquito species (7 pages), a bibliography of over 600 titles (46 pages) and an index (11 pages). GEORGE S. TULLOCH, Merrick, New York.